Tabulated statement showing principal characteristics of areas of high and low pressure.

Barometer.	First observed.			Last observed.		Duration.	Velocity per hour.	Maximum pressure change in 12 hours, maximum abnormal temperature change in 12 hours, and maximum wind velocity.									
	Date.	Lat. N.	Long. W.	Lat. N.	Long. W.			Station.	Rise.	Date.	Station.	Fall.	Date.	Station.	Direction.	Miles per hour.	Date.
High areas.		°	°	°	°	Days.	Miles.		Inch.			°					
I	1	44	98	50	86	1.0	29	Duluth, Minn	.88	1	Abilene, Tex	57	1	Chicago, Ill	ne.	40	2
II	3	52	103	44	63	2.5	34	Fort Buford, N. Dak	.66	2	Moorhead, Minn	25	3	Cleveland, Ohio	nw.	48	4
III	6	51	112	40	73	2.5	40	Halifax, N. S	.62	8	Fort Smith, Ark	50	6	Hatteras, N. C	n.	36	8
IV	10	53	105	43	70	2.5	37	Father Point, Que	.68	11	Nashville, Tenn	26	10	do	n.	24	12
V	13	40	80	35	74	1.0	21	New York, N. Y	.36	14	Atlanta, Ga	13	12	Atlanta, Ga	ne.	16	14
VI	13	54	113	39	98	2.0	31	Dodge City, Kans	.60	14	Kansas City, Mo	37	14	Fort Buford, N. Dak	nw.	30	13
VII	15	52	98	47	77	1.5	28	Qu'Appelle, N. W. T	.44	15	Rockliffe, Ont	21	16	Chicago, Ill	ne.	34	16
VIII	19	50	93	38	76	1.5	36	Buffalo, N. Y	.70	20	Cairo, Ill	22	20	do	ne.	34	20
IX	21	35	102	34	85	1.0	50	Nantucket, Mass	.66	23	San Antonio, Tex	13	22	New Orleans, La	n.	26	22
X	25	37	98	35	75	1.5	39	Norfolk, Va	.44	26	Abilene, Tex	15	25	Hatteras, N. C	n.	20	26
XI	27	48	78	43	72	1.0	21	Chatham, N. B	.38	27	Albany, N. Y	17	28	Portland, Me	n.	26	27
XII	27	41	104	37	89	1.0	42	Hannibal, Mo	.60	28	Kansas City, Mo	37	27	Galveston, Tex	ne.	26	28
Mean						1.6	34		.58			28				30	
Low areas.									Fall.			Rise.					
I	2	42	88	45	67	1.0	46	Huron, S. Dak	.54	2	Saint Louis, Mo	22	2	Woods Holl, Mass	nw.	51	3
II	5	47	88	47	65	1.5	36	Portland, Me	.66	6	Chatham, N. B	35	6	Erie, Pa	se.	46	6
III	8	41	113	50	69	2.0	50	do	.74	10	Yankton, S. Dak	35	8	Keeler, Cal*	sw.	61	8
IV	11	48	125	50	65	3.5	42	Rockliffe, Ont	.66	14	Father Point, Que	26	15	Amarillo, Tex	s.	56	13
V	12	29	86	40	70	1.0	52	Block Island, R. I	.48	13	Jacksonville, Fla	10	13	Block Island, R. I	ne.	65	13
VI	14	27	98	45	60	4.0	27	do	.62	18	Wilmington, N. C	22	15	Chicago, Ill	e.	54	17
VII	16	54	114	44	77	1.5	50	Port Arthur, Ont	.48	17	Parry Sound, Ont	24	17	Bismarck, N. Dak	nw.	34	17
VIII	19	46	84	48	66	1.5	31	Chatham, N. B	.66	20	Minnedosa, Man	20	18	Block Island, R. I	nw.	69	20
IX	20	52	100	40	81	1.5	36	Duluth, Minn	.36	20	Qu'Appelle, N. W. T	21	20	Swift Current, N. W. T	nw.	42	20
X	20	33	100	44	66	2.5	34	Block Island, R. I	.98	22	Pittsburg, Pa	20	21	Woods Holl, Mass	nw.	62	22
XI	21	53	113	47	61	3.0	41	Erie, Pa	.52	23	Chattanooga, Tenn	24	23	Cleveland, Ohio†	nw.	60	23
XII	26	36	103	51	87	2.0	30	White River, Ont	.70	28	Parry Sound, Ont	24	27	Chicago, Ill	sw.	60	28
Mean						2.1	40		.62			24				55	

*82 miles sw., Pikes Peak, Colo., 9th.

†92 miles w., Pikes Peak, Colo., 22d.

NORTH ATLANTIC STORMS FOR FEBRUARY, 1893.

[*Pressure in inches and millimeters; wind-force by Beaufort scale.*]

The paths of storms that appeared over the west part of the north Atlantic Ocean during February, 1893, are shown on Chart I. These paths have been determined from reports of observations by shipmasters received through the co-operation of the Hydrographic Office, Navy Department, and the "New York Herald Weather Service."

Over the north Atlantic Ocean the February normal pressure is highest in a small area southwest of the Azores, where it is above 30.20 (767), and the normal values are above 30.10 (764) in a belt extending from the eastern part of the ocean between the 22d and 40th parallels to the coast of the United States. The February normal pressure is lowest in an elongated area extending from southeastern Greenland over Iceland and Spitzbergen, where it is below 29.50 (749).

In February there is usually a decrease of pressure over the north Atlantic Ocean, except near Newfoundland, and in an area south of the Azores. The most marked decrease occurs in an area extending from the British Isles to the 40th meridian, where it varies from .05 to .10 inch, and a decrease of more than .05 inch occurs in an area south of the Banks of Newfoundland. In the area of high pressure south and southwest of the Azores the increase of pressure is less than .05 inch.

The principal track of February storms over the north Atlantic Ocean is traced from south of Newfoundland north of east to the 40th meridian, where the track divides, one branch being traced northeastward toward Iceland and the other east-northeast to the region north of the British Isles. An average of about 2 storms per month traverse the ocean from the American continent to Europe in February, and the average velocity of ocean storms for the month, about 23 statute miles per hour, is the greatest noted for the year.

In February, 1893, no less than 7 storms traversed the ocean from the American continent to European waters. From the 1st to the 6th, 16th to 19th, and 26th to 28th storms of exceptional severity prevailed over mid-ocean, and on the 14th, 19th, and 21st the pressure fell to or below 29.00 (736) near the British Isles.

From the 1st to the 6th the pressure continued low from the Banks of Newfoundland over mid-ocean, and on the 4th and 5th the barometer fell below 29.00 (736) and southwest to northwest gales of hurricane force were reported between the 20th and 40th meridians. During the 7th and 8th the storm apparently advanced northeastward and disappeared in the direction of the Norwegian coast. On the 7th low area II passed eastward over the Gulf of Saint Lawrence and Newfoundland, and the morning of the 8th was central northeast of the Grand Banks. Advancing eastward this storm passed over the British Isles during the 11th.

On the 11th low area III was central north of Newfoundland, from which region the center moved to mid-ocean by the 12th, and on the 13th was located northwest of Ireland. By the 14th this storm showed a marked increase in energy, the barometer fell below 29.00 (736), and west to northwest gales of force 7 to 11 were encountered east of the 40th meridian. Remaining nearly stationary during the 14th and 15th the storm apparently moved eastward over or north of the British Isles during the 16th.

During the 13th low area V moved northeastward off the south and middle Atlantic coasts, and on the 14th was central south of Nova Scotia. On the 15th and 16th the storm moved slowly eastward, with pressure falling to about 29.20 (742) east of the Grand Banks on the latter-named date, and during the 17th and 18th occupied mid-ocean, with pressure falling to about 29.00 (736) and westerly gales of force 8 to 11 between the 30th and 50th meridians. On the 19th the storm was central west of Ireland, with pressure below 29.00 (736) and southwest gales of force 9 to 11 east of the 20th meridian. By the 20th the storm had apparently reached the North Sea.

The night of the 19–20th low area VI–VII passed eastward

from the Canadian Maritime Provinces, and the morning of the 19th was central east of the Banks of Newfoundland, with pressure about 29.10 (739) and strong to whole west to north gales over the Banks of Newfoundland. Crossing mid-ocean during the 20th, attended by severe gales, this storm reached the British Isles on the 21st, with very low pressure over the southern part of Great Britain, and heavy northwest gales east of the 30th meridian. By the 22d the storm-center had apparently passed over the North Sea. On the 20th low area VIII occupied Maine and New Brunswick, and on the 21st passed over the Gulf of Saint Lawrence. Moving rapidly eastward this storm apparently reached the Bay of Biscay on the 23d, and passed thence eastward by the 24th.

Low areas IX and X passed from the south New England coast to Newfoundland during the 22d and 23d, reached mid-ocean on the 24th, passed south of the British Isles on the 25th, and apparently moved eastward over the continent of Europe by the 26th. Low area XI advanced from the south New England coast to the Grand Banks during the 24th and 25th, occupied mid-ocean during the 26th and 27th, with pressure 29.20 (742) to 29.40 (744), and apparently reached the British Isles on the 28th. On the 26th a storm appeared over the Gulf of Saint Lawrence and the Canadian Maritime Provinces, and passed thence to a position east of the Grand Banks by the 27th. On the 28th this storm possessed great energy, and pressure falling to about 28.50 (724) and heavy gales were reported over mid-ocean.

OCEAN FOG FOR FEBRUARY.

The limits of fog belts west of the 40th meridian, as reported by shipmasters, are shown on Chart I by dotted shading. East of the 55th meridian fog was reported on 4 dates; between the 55th and 65th meridians on 1 date; and west of the 65th meridian on 5 dates. Compared with the corresponding month of the last 5 years the dates of occurrence of fog east of the 55th meridian numbered 7 less than the average; between the 55th and 65th meridians 4 less than the average; and west of the 65th meridian the same as the average. Dense fog was reported at New York, N. Y., on the 1st to 3d, 6th, 7th, and 13th; at Atlantic City, N. J., on the 3d; and at Block Island, R. I., and Nantucket, Mass., on the 10th.

OCEAN ICE IN FEBRUARY.

The following table shows the southern and eastern limits of the region within which icebergs or field ice were reported for February during the last 10 years:

Southern limit.			Eastern limit.		
Month.	Lat. N.	Long. W.	Month.	Lat. N.	Long. W.
	° ′	° ′		° ′	° ′
February, 1883	42 01	52 46	February, 1883	46 10	45 44
February, 1884	42 00	50 00	February, 1884	46 50	43 45
February, 1885	41 50	51 12	February, 1885	47 52	42 00
February, 1886	46 10	47 15	February, 1886	48 00	44 47
February, 1887	40 00	48 00	February, 1887	46 26	41 50
February, 1888	44 59	45 08	February, 1888	44 59	45 08
February, 1889	45 35	48 00	February, 1889	45 35	48 00
February, 1890	41 12	50 12	February, 1890	44 30	35 30
February, 1891	44 20	48 00	February, 1891	44 33	44 59
February, 1892	47 25	47 55	February, 1892	49 05	46 30
February, 1893	45 11	48 56	February, 1893	46 20	46 40
Mean	43 42	48 50	Mean	46 24	44 05

The region in which Arctic ice was reported for the current month is shown on Chart I by ruled shading. The southernmost ice reported, field ice, noted on the 23d, was about 1½° north of the average southern limit, and the easternmost ice noted, field ice observed on the 22d in the position given in the table, was about 2½° west of the average eastern limit of ice for February.

No icebergs were reported during the month. On the 13th and 20th field ice was encountered off the southeast Newfoundland coast. On the 15th, 17th to 25th, and 27th field ice was reported along the east edge of the Grand Banks north of the 45th parallel.

Ice in harbors and bays of the middle Atlantic and New England states interfered with navigation at intervals during the month.

TEMPERATURE OF THE AIR (expressed in degrees Fahrenheit).

The distribution of mean temperature over the United States and Canada for February, 1893, is exhibited on Chart II by dotted isotherms. In the table of miscellaneous meteorological data the monthly mean temperature and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for mean temperature and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the temperature is below the normal and subtracting when above. The monthly mean temperature for regular stations of the Weather Bureau represents the mean of the maximum and minimum temperatures.

The mean temperature was highest over the southern part of the Florida Peninsula, where it was above 70. The mean values were above 60 generally over the Florida Peninsula, at points in southeastern Louisiana, in the lower Rio Grande valley, and in adjoining parts of southwestern Arizona and southeastern California. The mean temperature was lowest in Manitoba, Assiniboia, and north-central North Dakota, where it was 5 to 7 below zero; the mean readings were below zero in northern Minnesota and northern North Dakota; and were below 10 in the middle and lower Saint Lawrence valleys, over Georgian Bay and Lake Superior, and north of a line traced from north-central Wisconsin to north-central Iowa, and thence northwestward over central and northwestern Montana. At Climax, Colo., a mean of 9 was reported. North of a line traced from central New Jersey to the middle-eastern slope of the Rocky Mountains, thence to north-central New Mexico, thence over central Nevada to the Sierra Nevada Mountains, and thence over central Oregon and Washington the mean temperature was below 30.

DEPARTURE FROM NORMAL TEMPERATURE.

The mean temperature was below the normal, except over southern parts of the south Atlantic and middle and east Gulf states, and over the southern plateau region. The most marked departure below the normal temperature was noted on the northeast slope of the Rocky Mountains, where the mean readings were 7 to 10 lower than the February average. The departure below the normal was 7 in eastern Iowa, and was 4 to 6 from the upper Mississippi and Red River of the North valleys over the middle and northern plateau regions. The greatest departure above the normal temperature was reported on the middle coast of the Gulf of Mexico, where the month was 2 to 3 warmer than usual. The mean temperature was 2 above the normal at Southport, N. C., Charleston, S. C., and Yuma, Ariz.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for February for a series of years; (2) the length of record during